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EDITED BY F. W. HODGE

A SERIES OF PUBLICATIONS RELATING TO THE AMERICAN ABORIGINES

NATIVE HOUSES OF WESTERN NORTH AMERICA

BY

T. T. WATERMAN AND COLLABORATORS

NEW YORK
MUSEUM OF THE AMERICAN INDIAN
HEYE FOUNDATION
1921

This series of INDIAN NOTES AND MONOGRAPHS is devoted primarily to the publication of the results of studies by members of the staff of the Museum of the American Indian, Heye Foundation, and is uniform with HISPANIC NOTES AND MONOGRAPHS, published by the Hispanic Society of America, with which organization this Museum is in cordial coöperation.

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MAP
SHOWING THE DISTRIBUTION
OF
PIT STRUCTURES
IN
NORTH AMERICA

Eskimo pit-houses.

Rectangular, gabled, plank-houses with pit.

Rectangular shed-roofed plank-houses with pit.

Conical earth-covered houses of poles, semi-subterranean.

Subterranean or earth-covered houses, based on Kroeber's unpublished data.

Subterranean kiva.

Earth-lodges of the Plains, usually containing pit.

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NATIVE HOUSES OF WESTERN NORTH AMERICA

BY

T. T. WATERMAN AND COLLABORATORS

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NATIVE HOUSES OF WESTERN NORTH AMERICA

By T. T. Waterman and Collaborators

INTRODUCTION

THE present paper represents a survey of the literature which concerns the tribes of western North America, for passages referring to types of habitations. Four investigators joined the present writer in the enterprise: Ruth Greiner, Geraldine Coffin, Margaret Coffin, and Herbert C. Fish. The project was undertaken as part of the work of a seminar in Ethnography at the University of Washington. Mrs LeFay Davy Packard of the University of Oregon coöperated during one semester. Mr Fish was formerly Curator of the Historical Society of North Dakota, and has an intimate and somewhat extensive acquaintance with Plains tribes. The results here summarized are based largely on

a permanent collection of books in the University of Washington, known as the Northwest Collection, assembled over a period of years by the Associate Librarian, Mr Charles Wesley Smith. The present results do not, of course, exhaust the material on the region. On the other hand, the most representative sources have been included, except a few which were not locally available. Specifically, Boas' "Tribes of the North Pacific Coast" (*Annual Archæological Report*, Toronto, 1905) and Sarfert's "Haus und Dorf . . ." (*Archiv für Anthropologie*, N. F., Band 7, Heft 2 und 3, 1908) have not been consulted. All citations in the following pages refer to a terminal bibliography.

TYPES OF DWELLINGS IN NORTH AMERICA

The use among the North American Indian tribes of various kinds of dwellings has always been recognized as presenting interesting problems. The number of different forms is very large. In a brief article on the subject "Habitations" in the Handbook of American Indians,[1] Cyrus Thomas men-

tions no fewer than thirty-three types of houses, all employed in America north of Mexico; and this number could readily be increased by eight or ten additional forms. It seems possible, however, that the number of actually distinct types of structure is not so large as such a list would indicate. Thus, obvious points of resemblance can be found between forms of houses which this author mentions as independent types. To illustrate this, I have made the following tabulation, in which there are grouped those forms of houses that show obvious points of similarity. The first column supplies catch titles for the structures, while the second indicates the people by whom the structure is used.

Primitive North American habitations grouped according to similarity in construction, selected largely from Professor Thomas' article on "Habitations."

1. Structures of masonry (stone or adobe):

Cliff-dwellings	Sedentary tribes of
Pueblos	the Southwest
Kivas	

2. Temporary shelters:	
"Plateau" type of lodge, framework of poles covered with mats	Nez Percé
"Wickiups" (shelter of poles covered with brush)	Paiute
3. Houses with a permanent framework of poles, covered with bark, thatch, mats, or other light material:	
"Long-houses"	Iroquois
Elongate houses with bowed roofs	Virginia tribes
Palmetto houses	Louisiana tribes
Hemispherical bark-lodges ("wigwams")	Winnebago
"Grass-lodges"	Wichita
Conical bark-lodges	Ojibwa
A-shaped lodge on piles	Seminole
4. Houses consisting of a pit, roofed with beams, covered with earth:	
Dome-shaped earth-lodges of the Sacramento valley	Maidu
Semi-subterranean lodges of the Plateau	Shushwap

Timber houses of the Western Eskimo	Alaska tribes
Circular pit-houses of New Mexico, entrance at the top (described by Hough)	Prehistoric people of Luna, New Mexico
Rectangular pit-houses of the Plains, entrance at the top (described by Sterns)	Prehistoric people of eastern Nebraska
5. Rectangular houses of planks:	
Rectangular plank-houses of southern Alaska	Haida
Rectangular plank-houses of the Puget Sound region	Songish
Rectangular plank-houses of northern California	Yurok

Such an excursion as this into the field of classification involves no detailed consideration of the construction of these houses. Yet the obvious facts of geographical distribution would suggest that the resemblance is not a mere matter of chance. Thus, a "grass-lodge" is a grass-lodge, and a "wig-

wam" is something different. Yet the fundamental idea, embodying a permanent framework of poles covered with bark, or thatch, or mats, or grass, or palmetto-leaves, characterizes both the grass-lodge and the wigwam, and a whole series of other houses besides. If the distribution of each form could be plotted on a map, the occurrences of each type would be found to run pretty well together. This might lend color to a theory that the wigwam, grass-lodge, and various other houses, go back to one fundamental type of structure, modified by various factors in various areas.

TYPES OF HOUSES FROM THE STANDPOINT OF DISTRIBUTION

It is important to know in all cases whether similar houses existing in adjoining areas represent independent invention or the spreading of a concept from a common center. The purpose of the present paper is to examine the houses west of the Mississippi river from this point of view. The query thus proposed is one aspect of an old and somewhat shop-worn topic. The particu-

lar matter of finding classifications of some kind into which North American houses will fall, is not itself a novel enterprise. Cyrus Thomas, in the article mentioned, classifies North American habitations as "communal houses" and "single dwellings." In this matter he follows Lewis H. Morgan. Nothing seems to come of this method of approach; that is, communal dwellings seem to be scattered about over the various tribes of the continent, in a more or less chance way. Wissler in his recent book goes a good deal further. He takes up, though briefly, the matter of classification, from the standpoint of resemblances in construction. He mentions the "house with the bowed roof" (Virginia), the Seminole "pile-dwelling" (Florida), the "oval dome-shaped house plastered with mud" (Arizona), and the Iroquois "long house" (Great Lakes region), as though the matter of possible relationship were lurking in his mind. His passage on houses is brief. It would be extremely interesting to know in detail what his ideas are. He certainly implies relationship (1) between the conical skin tent or

tipi of the Plains and the "conical, excavated, earth-covered lodge of the Navaho;" (2) between the plank-houses of the north Pacific coast and those of California; and (3) between the earth-covered pit-dwellings of California, those of the interior Northwest, the subterranean house of the Alaska Eskimo, and the stone houses of the Arctic east of the Mackenzie. The present paper is an effort to follow the problem along the lines pointed out by Wissler. He remarks that there are not sufficient data at hand for detailed comparisons between structures. That is undoubtedly true, for the general problem. The present contribution essays only to indicate the present state of our information concerning one area.

It may be well to remark at the outset that the keynote as regards the habitations of the western half of the continent seems to be the distribution of a peculiar type of structure, the "earth-covered pit-dwelling." Pit-dwellings are known to be of wide distribution in America. Jochelson, in a famous paper of some years ago, advanced the further conclusion that the earth-lodges of

the whole continent were derived from those of Asia,[2] indicating, somewhat hastily, the principal facts of their distribution. There is a good deal of additional information, some of which is listed here, which he might well have included. It seems to make his theory somewhat more persuasive. Professor Boas referred at an even earlier date to the distribution of earth-lodges.[3] The evidence remains unsatisfactory to the present day, for the simple reason that the facts have never been properly recorded. For many vicinities we must depend on helter-skelter remarks, and in regard to some regions we have nothing to depend upon at all. We may, however, look at the facts, if merely for the sake of defining the problem.

Our starting-point is the fact that underground houses are in common use in northeastern Asia. Some tribes of the extreme northeast (the Koryak and Kamchadal) have elaborate underground dwellings. They are built over a circular pit from a meter to a meter and a half deep. The roof is conical, made of poles laid horizontally. This

roof is supported in the center by four posts. The wall is double, the planks or poles extending vertically in most houses, though one series or layer may be horizontal. A square smoke-hole in the center of the roof serves as a winter doorway. The visitor descends on a log with holes cut for the feet, which serves as a ladder. A side entrance consisting of a covered passage is used in the summer, and has no interest for the present investigation. We may regard these as the principal features of the structure. Concerning the distribution in Asia of this and similar underground houses, a good deal has been said by Jochelson and others, and there is nothing to be added here. The present undertaking is to find what tribes in America have houses resembling this Asiatic structure. It is important to indicate also the nature and extent of correspondences, and to discuss the geographical position of the tribes involved. It is most convenient to take the matter up by areas. The areas which we will deal with in the present paper are as follows:

(1) The Aleutian islands and western Alaska.

(2) Inland from Stikine river to San Francisco bay.

(3) The coastal region occupied by the Tlingit, Haida, Tsimshian, Kwakiutl, and northern Salish.

(4) Western and southern Vancouver island, Puget sound, and the coast of Washington as far south as the limit of Quilliute territory.

(5) The Pacific coast from the Quinault habitat to Humboldt bay in northern California, inclusive.

(6) The Southwest.

(7) Southern California.

(8) The Plains.

The facts concerning the houses of each area are presented in the form of tabulations, which are printed at the end of this paper. The occurrence of each structure mentioned by the authorities is indicated by a number on an accompanying map (pl. 1). The dates mentioned in the tabulations are those when the observations were made

The information in many of the sources is laconic and fragmentary in the extreme.

AREA 1. THE ALEUTIAN ISLANDS, TOGETHER WITH WESTERN ALASKA

It will be noted, in looking at the tabulation referring to this area, that in some cases the resemblance to our standard Asiatic house dwindles away. Thus, the only definite information about the houses of Atkinson island is that they are hemispherical (whatever that means) and earth-covered. Nothing is said of a pit. It seems that correspondences are somewhat closer in the case of those tribes that are located near Asia; for example, the Aleut. Other things being equal, this situation would fit most readily into a supposition that we have here a form of house which has spread from Asia, and undergone modification by external circumstances or by other factors. The evidence is certainly meager. Additional observations should be made among the natives of this vast region before it is too late. Given the facts as they stand, however, the idea of diffusion of one type of

EARTH-COVERED LODGE ON UNALASKA ISLAND

The fence was built to keep stock away

structure among these tribes is a more plausible explanation of the existing resemblances, than any other.

AREA 2. INLAND FROM STIKINE RIVER TO SAN FRANCISCO BAY

We have next to consider an area which is, on the whole, an interior region, extending southward from the mouth of Stikine river in Alaska, and approaching the coast again near San Francisco bay. Dwellings more or less suggesting our standard Asiatic type are found over this whole province. Their distribution, so far as the literature indicates it, is not continuous. Correspondence in form is in some cases slight, but in others very close, amounting almost to identity. This area nowhere touches the preceding one. It is in fact separated by a considerable gap, by the distance, that is to say, separating Kodiak island from the Ts'Ets'a'ut (see map). This latter tribe have a form of dwelling which at one season of the year is entered through the smoke-hole. It is covered with bark, and is not underground. In this case the resemblance to the Asiatic

structure is certainly remote. The first genuinely underground dwelling which we encounter in traveling southeastward from Kodiak island is described in a passage referring to the Carriers, or Takulli, on Babine agency in northwestern British Columbia. "Some of them live," says Wilkes, "in excavations in the ground, which they cover with earth, leaving only an aperture in the roof, which serves both as an entrance for themselves and a vent for the smoke." From the Carrier tribe we have a more or less continuous distribution of such underground houses, extending clear to the territory of the Miwok, just north of San Francisco bay. The groups in this area for which underground houses have been reported are shown in the tabulation headed "Area 2" below.

Of the houses in this list, the Thompson River form and one of the Maidu forms are practically replicas of the Asiatic structures mentioned at the outset of this discussion. The form used by the Southern Maidu resembles the distant Asiatic house more closely than it resembles the houses used by

nearby divisions of the Maidu. It may well be remarked at this point that absolute structural identity is not to be looked for in houses. All divisions of the Maidu used semi-subterranean dwellings, of one general character. Yet the framework in the Maidu forms is put together according to quite different schemes. It would be almost absurd to assume that these structures were independently invented. Considering the hit-and-miss character of the data with which we are dealing, the demonstrated resemblances over this whole large area must be significant.

In our tabulation only four interior Salish tribes appear. Would we be justified in reaching the conclusion, on the basis of this evidence, that all the interior Salish tribes had the underground house? We would not. It is, however, a fact that all the interior Salish did have it, a statement for which Boas is authority (1890, p. 663). Probably this underground type of house is of much more common occurrence than the scattered references in the literature would

indicate. The conclusion can hardly be avoided that we are dealing with a case of diffusion, over this one definite area, at least.

A glance at the map will show that the tribes we have just referred to have a somewhat curious distribution. They extend over an elongate area which in the north strikes away from the coast, passes inland for a long distance, and returns to the coast again at San Francisco bay.

The next area for consideration is that occupied by the coast tribes of this same general region. The area we are about to consider is hemmed in by the one we have just discussed. The houses in this coastal region are quite different in many ways from those just treated; in fact, they are usually spoken of as an "entirely different" type. They differ in this, that instead of running up toward a center, forming a dome, or cone, they assume a rectangular form, with a ridge-pole. They are made, moreover, of planks, instead of from such materials as split logs, poles, brush, or thatch. In no case are they earth-covered

AREAS 3, 4, 5. RECTANGULAR PLANK-HOUSES OF THE PACIFIC COAST

Probably the first question to be settled is this: Are all the rectangular plank-houses of the coast tribes, from southern Alaska to northern California, similar; or do we find a number of types? Differences can easily be discovered as we pass from tribe to tribe along the coast. Previous observers have already broken this region into sections, each one being characterized by a peculiar form of house. Thus Boas points out, in a classical paper, that the Haida and Tlingit have houses of one type, with three roof-beams on each side of the central line, while the Tsimshian and Kwakiutl employ another style of construction, with only two such beams (Boas, *f*, 582). The Nootka and Coast Salish house is again different. Their houses assume a "shed" form, in place of the gabled construction; and have an enormous length, in some cases exceeding a thousand feet. When we cease to regard minor differences, however, the situation as regards all these types of houses

seems fairly simple. The list given below (Area 3) will indicate the distribution of the gabled form found among the Tlingit, Haida, and other northern tribes, as far south as the mainland Salish of British Columbia.

Many of the tribes in this southern area build a variety of shelters for use in different seasons of the year, or in different situations, or for various purposes. This is a matter which may be safely set aside for our present purpose. The type of house discussed in the tabulation may be regarded as the typical structure in this region.

In the area around the Straits of Juan de Fuca we encounter another type of structure. It is quite sharply variant from the one just discussed. This new type has the "shed" roof mentioned above, and is characterized by dimensions which are almost titanic. The distribution of this type is shown in the tabulation referring to Area 4.

South of the Straits of Juan de Fuca we encounter *gabled* forms, similar to those we found in Area 3 (Tlingit, Tsimshian, and neighboring tribes). Such forms are con-

tinuously encountered in traveling southward from the Quinault until we come to the tribes about Humboldt bay in northern California. South of that point they are replaced again by other forms, particularly by conical houses of poles, covered with earth. The distribution of gabled houses over this southern half of their area of distribution is shown in the tabulation covering Area 5.

Certain conclusions are strongly suggested by these data. In the first place, the occurrence of plank-houses over this last-named region is manifestly due to diffusion. The distribution, so far as *available information* is concerned, is not continuous; but it is so nearly continuous that a hypothesis of independent invention for any given tribe would seem quite artificial. In a more general way it is noteworthy that the succession of forms from north to south, Alaska to California, is as follows: (1) gabled, (2) shed-like, (3) gabled. There are apparently a few tribes about the Straits of Juan de Fuca which employ shed forms exclusively. These tribes are the

Nootka, Makah, Quilliute, Songish, and possibly a few additional Salishan groups. North and south of these tribes, gabled and shed forms are in use, side by side, over considerable areas. There is, however, a noticeable transition, in both directions, to the use of gabled forms, which are the only forms reported from the remainder of the coast. The resemblance between the gabled houses used in the north and those used in the south is too close to be the result of accident. In the south, as in the north, such structures have ridge-poles, sometimes paired. In the central region the house has no ridge-poles, the roof slanting in one direction only. In the south, as in the north, the *end* of the house is toward the beach; in the central area one long *side* of the house parallels the beach. In the north and south there is characteristically one entrance, sometimes two (a front and a rear door). In the central area there is often a series of openings along the front side, plus at least one opening in the rear, with still other openings in the ends. The house of the central region is, on the whole, of simpler con-

struction (I am not speaking now of size). There is historical evidence that they have improved rapidly in recent generations. Captain Cook, for example, speaks of the rudeness and the helter-skelter character of the structures he examined at Nootka sound in 1778. Such charges I have not heard made against the houses of the Tsimshian or of other northern tribes, or against the tribes of northern California. As elsewhere pointed out,[4] the situation can be most readily explained on the assumption that an intrusive style of architecture has appeared along the coast in the central area. The facts suggest that the Salish, in migrating into their present neighborhood, brought along from the interior, possibly from the Plateau, notions of crude and limited forms of architecture. Apparently these intrusive peoples rapidly acquired the use of planks from the coast peoples, who evidently possessed, even centuries ago, a highly-developed technique in woodworking. It seems that they were more deliberate, however, in taking over the Coast form of house. This would account for the fact that they

build plank-houses which retain a peculiar form. If this assumption is true, the Nootka have meantime fallen under the influence of their Salish neighbors, borrowing from them this simpler style of architecture. On Puget sound several forms of house have been simultaneously in use: one of them the "shed" form, another a modified shed-like structure, and the third a gabled form similar to that used along Columbia river and among the tribes to the southward. The fact that so many forms were in use on Puget sound for identical purposes at one and the same time, cannot readily be accounted for.

A general similarity underlying all these structures, whatever the form of the roof, can hardly be denied. They are all made of planks, split from trees by identical methods. The rectangular form is always preserved, whatever the vagaries observable in the roof construction. Moreover, all these houses are identical in one curious feature, namely, in possessing a pit. Pits are mentioned here and there in connection with houses, over the whole area, from

Alaska to California. Such excavations were used around Puget sound, where village-sites are in many cases marked even yet by the depressions of old house-pits.

This point is also brought out by Harlan I. Smith in his well-known paper on the Archæology of the Gulf of Georgia and Puget Sound. "House sites are sometimes indicated in the shellheaps by an embankment surrounding a large rectangular level space. These . . . have been obliterated at older sites."[5] Around Puget sound the native term for "village-site," *tcɛ́tca-a'ltʷ*, means literally a "collection of house pits" (*tca*, pit; *altʷ*, house). From a comparative standpoint, the most important point about these pits is that they are of no conceivable use. No Indian has yet been seen who could advance an explanation of why his people made pits for their houses. They are of little use for protection. In all these houses the occupants sleep on a sort of shelf above the sides of the pit. In the Puget Sound area and among all the tribes to the northward, "bunks" or sleeping platforms were built

which elevated the sleepers still more. Under such conditions the "pit" becomes a character of very considerable importance in classifying structures. To put it briefly, all the facts seem to point to the conclusion that we have the whole way along this coast *one* type of house. That house is a rectangular plank structure, with a pit, modified at the central part of the region by intrusive influences.

THE POSSIBLE RELATIONS OF THE RECTANGULAR PLANK-HOUSE TO THE CONICAL PIT-DWELLING

We have discussed now two forms of habitations, one a conical earth-covered structure with a pit, the other a rectangular plank structure with a pit. The distribution of the first, or conical house, might be represented by the arc of a circle, which strikes inland from the coast in the north, trends southward, and finally comes to the coast again in northern California. The second form of house is distributed over just exactly that area where the first form is not encountered. The two types, conical

and rectangular, are never found existing together. It would seem to be a plausible idea that the conical or "interior" type has in the coast region been changed by modification into the rectangular form. In other words, the facts would be quite readily explained on the assumption that in the coast region (possibly somewhere about the mouth of Fraser river) an original form of house became very much modified, along with the development of a highly-specialized woodworking culture. Woodworking evidently became very long ago an important and typical industry in this region, resulting in the making of boxes, dugout canoes, ceremonial objects, dishes, and planks. Wide planks are produced with relative ease in this region. This point might, by the way, be over-emphasized. The process is really an intricate and difficult one. Perhaps it would be better to say that the possibility exists of making wide and long planks, a matter which hinges on the fact that certain trees like the cedar grow to great sizes. The external situation resulted naturally, we may say, in using planks for the building of

houses. Houses made of planks are almost certain to take a rectangular form. The rectangular house of the coast region with its characteristic "pit" might be interpreted as a squared-off pit-dwelling, fashioned out of planks. The ridge-pole or gabled construction and the rectangular shape would be easily understood as secondary modifications brought about by the use of planks.

This conclusion is quite in line with facts brought to light some years ago by Harlan I. Smith. As the result of his very interesting investigations in the archeology of the region, he discovered that the archaic work in stone in the coast and the interior regions is much more similar than is the modern work of the same regions.[6]

If our present inferences are sound, an exactly parallel condition exists in regard to houses, the older styles over the whole area being much more uniform than are the recent forms.

There is other evidence that the present form of plank-house may have been preceded in the history of the area by a conical

earth-lodge entered from the top. An example is the curious tale spoken of by Boas:

> A certain man's wife is stolen by the Killer-whales, and taken to their village under the sea. The fellow ties a stone to his feet in wrath and jumps overboard, determined to go to the ocean bottom and get his wife back. "Down below" he encounters an acquaintance, a Shark, who lives as a slave in the Killer-whales' house. This slave arranges with the outraged husband, that as he goes in the house-entrance with a basket of water, he will purposely stub his toe and spill the water on the fire. While the house is filled with steam, the man is to pounce upon his wife and carry her off.[7]

This incident would seem to imply that the original story-teller had in mind a subterranean dwelling, in which the entrance is directly *above* the fireplace. In the plank structures of the present day, a distance of forty feet separates the entrance from the place where the fire burns. The incident might of course be explained by the supposition that the people telling the story had immigrated into the coast region from an area where the subterranean house was in use; or that the myth itself, in whole or

in part, had been imported from such an area. Whatever the value of the myth as evidence, the presence of pits in the houses of this whole region, both along the coast and in the interior, can most readily be explained as the result of the diffusion of the idea from some one source. The distribution of these somewhat similar and apparently related types of houses is shown on the accompanying map.

PIT-STRUCTURES IN OTHER AREAS

Structures with pits are to be found in only three other localities in the whole of North America, or, for that matter, in the whole of the New World. These three vicinities are (1) the Plains; (2) the Southwest; (3) southern California. The forms differ considerably in these three areas. In the Southwest the "typical" subterranean structure is an underground ceremonial chamber, the so-called *kiva*. It has a flat roof, not a conical one, and is used almost purely for religious purposes. It is entered by a ladder through a hatchway in the ceiling. It is sometimes round, some-

times rectangular, and its walls consist in part of masonry. In some cases it is not subterranean, but authorities seem to agree that the circular, subterranean form is the characteristic and original one.[8]

It has often been suggested that the kiva is a survival of an ancient form of dwelling. Cushing apparently made the first formal suggestion along this line. Fewkes has adopted the idea, and states it categorically as an established fact.[9] It is interesting to note that remains of ancient underground dwellings have recently been discovered in this area by Hough. The Southwest is an area in which underground structures are certainly characteristic and important.

When we turn to the Plains region we find that underground or semi-underground structures are again very characteristic. The widely distributed earth-lodge of that region is a conical edifice of poles and logs, heavily covered with earth. It is widely distributed and frequently described. In some cases these earth-lodges are built over deep pits. Remains of dwellings com-

pletely underground have recently been reported from eastern Nebraska by Sterns. According to his description they were rectangular in outline, had a flat roof, and were entered by a ladder. It would seem, therefore, that the ancient structures of the Plains were much more similar to the ancient structures of the Southwest than are the modern ones. The geographic distribution of underground and semi-underground structures in these two areas, and in southern California, is therefore a matter of some interest. Their distribution in the Southwest is indicated schematically in the tabulation below (Area 6).

The nature and history of the earth-lodges, or *hogáns*, built by the Navaho, is a matter which might be of interest here. The facts of their distribution, however, add little light to the present discussion. They are entirely included within the area of typical pueblo and cliff-dweller structures. Wissler is inclined to view the *hogán* as a distant relative of the Plains tipi. Altogether the *hogán* is a matter which preferably may be left to one side.

In southern California underground dwellings were reported by the first explorer along the coast, Juan de Cabrillo, and have been discussed more recently by Putnam. At the present time traces of these structures are perfectly manifest on the old shell-heaps, in the form of imposing funnel-shape depressions. The senior author of the present paper has seen them, in company with Mr Leonard Outhwaite, on Santa Cruz island. Schumacher, in digging around these sites some years ago, found some of the planks which lined the pit. Earth-dwellings occur somewhat irregularly from the Channel islands to the Colorado river, where they were used by the Mohave within the historic period. In this area, tribes which do not have earth-covered dwellings with pits invariably use at least the semi-subterranean earth-covered sweat-house, employed, to be sure, for ceremonial purposes only. This whole matter is illustrated by the table given below (Area 7).

The point of greatest interest here is the fact that the pit-structures of southern California find their closest analogues in the

Southwest. Indeed we can hardly go wrong in assuming that, in regard to pit-structures, southern California and the Southwest form one area. In southern California, as in the Southwest, pit-dwellings are part of a complex which includes the art of pottery. It is thus quite likely that the pit-structure peoples of southern California were not under the influence of their neighbors in northern California. An area absolutely without pit-structures or potsherds, recent or ancient, intervenes. There is, on the other hand, an almost continuous distribution of pit-structures, and a perfectly continuous distribution of pottery, leading from California to central Arizona. There are certain ceremonial matters also, such as a color symbolism for the four directions, and the use of religious intoxicants (specifically the jimson-weed, *Datura meteloides*) which unmistakably link these two areas. So far these areas, southern California and the Southwest, seem to stand together, without any connection to the northward. The question of pit-structures on the Plains becomes accordingly a matter of great in-

terest. Pit-structures of a very clear type are reported from the latter area, and the well-known "earth-lodge," of very wide distribution, sometimes takes a form which could be readily described as a pit-dwelling. Cases have been reported where they contained excavations as much as six feet deep; where they had a heavy covering of earth; and where a ladder consisting of a notched log led up to a large, square smoke-hole. It is obvious that such earth-structures may have been independently invented on the Plains. The idea of pit-dwellings may, on the other hand, have passed thither from the Southwest. A third possibility, which at first glance seems somewhat forced, is that such pit-structures came into the Southwest via the Plains, from some northern source. It is very unlikely that they went the other way around the circuit, that is, down the Pacific coast, across to the Southwest, and into the Plains, because the hiatus in central California is a positive one. Such structures certainly never existed there, unless the earth-covered sweat-house is to

be regarded as a modified form of pit-dwelling.

A hasty inspection of the literature gives certain data on the distribution of pit-dwellings and "earth-lodges" in the Plains area. This matter is illustrated in a tabulation below (Area 8).

The curious fact comes to light that the well-known grass-lodge in some of its forms is built over a pit. This feature is clearly indicated in Doyle's description[10] of the Wichita lodge. The pit is 1½ feet deep in the locality he describes (Fort Sill, Oklahoma). Fuller knowledge of these lodges than we possess, including the facts of their distribution, would be necessary for a discussion of their possible relationships.

It is obvious from these imperfect data that we encounter a great many permutations of form and combinations of elements in these Plains structures. Yet one or two points obtrude themselves quite clearly. One is that the "earth-lodge" of the Plains in some of its forms is even in modern times a *bona fide* pit-dwelling. Anciently, pit-dwellings of a very thorough-going type

existed here. A second point is that, geographically, the area does not link very clearly with either the Southwest or the Northwest area, the probability remaining that the explanation of Plains pit-dwellings is to be found in one direction or the other. The hypothesis of borrowing and modification is more plausible than the notion of independent invention. The latter assumption would imply that of all the tribes and nations in the New World, from Greenland to Cape Horn, the only groups to devise pit-structures were certain tribes living next-door to regions where pit-structures were in use.

There is a possible inference, therefore, that the Plains tribes received the earth-covered pit-dwelling from the Northwest. If that is the case, they probably passed it on to the Southwest, and through the Southwest to the peoples of southern California. The interesting fact develops now that they apparently passed it on, also, to certain tribes living in the area east of the Mississippi.

Inspection of Mr Bushnell's recent paper

on Native Villages and Village Sites east of the Mississippi brings to light several tribes in the area east of the Mississippi which possessed underground dwellings. It will be noted at once that such dwellings seem to have been widely distributed in this area. The tribes possessing underground shelters are shown in a tabulation below (Area 9). Complete citations to the original authorities will be found in Mr Bushnell's monograph.

CONCLUSION

The fairest inference from the available evidence seems to be that the pit-lodges at least of extreme western North America represent the spreading of an idea from one common center. Especially when the similarities of these structures are considered in connection with their distribution, such a conclusion seems to be strongly suggested.

It may be well to state that the data are unsatisfactory, not only for the conclusions here proposed, but for any other conclusions. It seems that the facts already in our possession give a fairly clear account of

themselves, considering especially the limited amount of material to which appeal can now be made. There is a fair prospect that fuller information would tend to make our conclusions more plausible. That one architectural idea, namely, the erection of houses over a pit, has spread over the entire western half of the continent seems to be a fair presumption.

Whether or not the type of dwelling was ultimately derived from Asia is more doubtful. An hypothesis of Asiatic derivation seems, however, simpler than any other.

TABULATIONS

AREA 1

THE ALEUTIAN ISLANDS, TOGETHER WITH WESTERN ALASKA

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Coxe, p. 103	1787	Earth-covered pit-dwelling, entered through the smoke-hole.	Unalaska	1
Billings, p. 260	1802	Earth-covered pit-dwelling, entered through the smoke-hole.	Unalaska	1
Campbell, p. 73	1816	Round mud house, door in top.	Unalaska	1
Langsdorff, vol. 2, p. 32	1805	Pit-dwelling, roof covered with earth, entrance through the smoke-hole.	Aleutian ids.	1
Dall, p. 83	1877	Pit-dwelling, frame of whale-ribs, turf-covered, entered through roof by notched ladder.	Aleutian ids.	

Coxe, p. 149	1787	"Caves, roofed with wood, earth-covered," door at top, entered by ladder.	Aleutian ids.		AREA 1
Cook, vol. 2, p. 484	1784	Sloping roof of logs without side-walls, covered with sod, smoke-hole in roof, entrance at one end.	Norton sd.	2	
Murdoch, p. 72	1887	Square, earth-covered house, sometimes underground, entrance by a tunnel, ridge-pole transverse to passage, whole made of fitted planks which are vertical in the walls, and run from eave to ridge-pole in the roof.	Pt Barrow	3	
Tytler, p. 279	1833	Hemispherical huts, earth-covered.	Atkinson id.	4	

AREA 1—*Concluded*

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Campbell, p. 99	1816	Underground house.	Kodiak id.	5
Bancroft, vol. 1, p. 74.	1886	Winter house square, excavated 2 ft. deep, roof of boards or poles or whale-ribs, smoke-hole. Entrance is at side. Earth-covered in some cases.	Kodiak id.	5

NOTE.—Additional authorities for Aleutian habitations may be found cited in Jochelson's work. They apparently contain no facts additional to those shown above.

AREA 2

Inland from Stikine River, British Columbia, to San Francisco Bay

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Boas (d), p. 562	1895	[Description given just above.]	Ts'Ets'a'ut	6
Boas (f), p. 633	1896	Underground or semi subterranean houses.	All interior Salish	
Wilkes, vol. 4, p. 451	1845	Excavated winter dwellings covered with grass and earth, aperture in roof for entrance and smoke-hole.	Carriers (Takulli)	7
Farrand, p. 826	1910	Subterranean huts.	Tsilkotin	8
Teit, pp. 192–195	1900	Circular, semi subterranean houses, entrance by ladder through smoke-hole, earth-covered, pit 1½ meter deep.	Thompson Shushwap Okanogan Lillooet	9 10 11 12

AREA 2—*Continued*

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Curtis, vol. 8, p. 42 Spinden, p. 68	1911 1907	Menstrual lodge, circular, pit, covered with earth, opening at the edge, descent by a ladder.	Nez Percé	13
Farrand, vol. 2, p. 66	1910	"Evidence that they used the typical underground lodge."	Nez Percé	13
Curtis, vol. 4, pp. 4, 159	1909	Winter room underground, flat roof, opening serving as door, window, and chimney.	Yakima	14
Smith, p. 55	1910	"Sites of ancient subterranean winter houses."	Yakima	14
Sapir, p. 918	1910	Partly underground winter house, roof of bark.	Wasco	15

Abbott, vol. 6, p. 69	1857	Winter huts like beehives, pits 4 ft. deep, large sticks support roof of poles, earth-covered, entrance by a ladder through hole in roof.	Klamath	16
Bancroft, v. 1, p. 334	1886	Conical house, earth-covered, pit 5 ft. deep, entrance through smoke-hole, notched log for ladder.	Klamath	16
Powers, p. 225	1877	Structure of poles, braced with posts, earth-covered, pit, opening at top "reached by center pole."	Modoc	17
Kroeber (in press)		Earth-covered houses.	Achomawi	18

AREA 2—*Continued*

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Dixon, pp. 168, 169, 172		Framework of poles, covered with bark or pine-needles and ½ meter of earth, pit 1 meter deep, 12 meters in diameter, two main posts, entrance formerly through smoke-hole, ladder of two poles with cross-pieces, three center posts, wall-beams horizontal.	NW. Maidu NE. Maidu	19 20
Dixon, p. 172		Four center posts, wall-beams run toward the center.	S. Maidu	21

Powers, p. 221	1877	Earth-covered dwelling, dome-shaped, pit 2 ft. deep.	Patwin	22
Powers, p. 128	1877	Dome-shaped assembly hall, earth-covered.	Yuki	23
Kroeber (in press)		Dwelling-house formerly of typical underground construction.	Yuki	23
Powers, p. 159	1877	Assembly house, cone-shaped, pit 63 ft. in diameter, 6 ft. deep, earth-covered, five central posts.	Pomo	24
Powers, p. 167	1877	Assembly hall earth-covered, pit 4 or 5 ft. deep, entrance by tunnel at one side.	Yokaia	25
Powers, p. 35	1877	Winter-house of poles and brush, earth-covered.	Miwok	26

AREA 2—*Concluded*

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Drake, p. 321	1578	Houses "digged round about with earth, and have from the uttermost brimmes of the circle clifts of wood set upon them, joyning close together at the toppe like a spire steeple . . . Their bed is on the ground . . . and lying about the house, they have the fire in the middest."	Coast of Marin county, Calif.	27

AREA 3

TLINGIT, HAIDA, TSIMSHIAN, KWAKIUTL, NORTHERN SALISH

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
La Perouse, vol. 2, p. 120	1798	A-shaped shelter, 25 x 15 ft., covered only to windward, planks run toward ridge-pole. Planks were transported from place to place.	Tribe S.E. of Mount Saint Elias	28
Portlock, p. 292	1789	Shelter made of a few planks, transported from place to place.	Prince William sd.	29
Shotridge, pp. 86–89	1913	Rectangular house, gabled, wall-planks horizontal in rear and at sides, vertical in front, doorway in front end, smoke-hole sometimes protected by wind-breaks, deep pit.	Chilkat	30

AREA 3—*Continued*

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Langsdorff, vol. 2, p. 110	1814	Gabled house, ridge-pole, entrance in gable end, wall-planks horizontal, bark roof.	Tlingit (Sitka)	30
Bancroft, vol. 1, p. 160	1886	House 50 ft. square, two ridge-poles, pit 10 ft. deep.	Haida	31
Swanton, pp. 283, 284, 290, pls. 4, 10, 12	1909	Gabled house, wall-planks vertical, roof-planks transverse, door in gable end, pits.	Haida	31
Collison, pp. 88, 104 (photos)	1916	Wall-planks vertical, pit 12 ft. deep.	Haida	31
Niblack, p. 306, pl. 35	1888	Gabled house, wall-planks vertical, roof-planks transverse, pit (sometimes in several "steps").	Haida	31
Boas (f), p. 580	1896	Square gabled house, ridge-pole, wall-planks horizontal, roof-planks transverse, tip-	Tsimshian Kwakiutl	32 33

			ping smoke-hole cover, entrance in one end, rear end of house "on ground," front end on a "built up" platform.		
Boas (g), pl. 30	1909	Gabled house, ridge-pole, wall-planks sometimes vertical, sometimes horizontal, roof-planks transverse, pit.	Tsimshian	32	
Boas (b), p. 197	1889	Square gabled house, ridge-pole, wall-planks vertical, roof-planks transverse, door in end, pit in steps, "like amphitheater."	Kwakiutl, Fort Rupert	33	
Boas (e), pp. 367–370	1895	Square house, gabled, doorway in end, wall-planks vertical, roof-planks transverse. No pit (excavation), but the center of the house is surrounded by a high embankment of earth.	Kwakiutl	33	

AREA 3—*Concluded*

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Boas (c), p. 801	1890	Gabled house, wall-planks horizontal, pit in "steps" like amphitheater.	Northern Salish	34
Curtis, vol. 9, p. 48	1913	Rectangular house, gabled, wall-planks vertical, roof-planks transverse.	Northerly Salish of Vancouver id.	34
Hill-Tout, pl. 9, 10 (photos)	1907	Some houses have vertical wall-planks, some have horizontal. Some houses are gabled, some are of shed form. Entrance in the gabled form is at one end. No mention of pits.	Mainland Salish, northern British Columbia	35

AREA 4

Western and Southern Vancouver Island, Puget Sound, the Coast of Washington as Far South as the Limit of Quilliute Territory

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Cook, vol. 2, p. 314	1778	Shed roof, wall-planks horizontal, entrance through "chance" openings, move plank to make smoke-hole, no mention of pits.	Nootka	36
Jewitt. p. 99	1896	Wall-planks horizontal, doorway in side-wall.	Nootka	36
Meares, vol. 1, p. 222	1788	House of vast size, square, 20 ft. high, planks wide and long, enormous posts, 3 rafters, move plank to make smoke-hole.	Near Nootka sd.	36
Boas (b), p. 801	1889	House with shed roof.	Salish	

AREA 4—*Continued*

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Fraser, p. 193	1808	House with shed roof, wall planks horizontal, permanent smoke-hole.	Lower Fraser	37
Boas (c), p. 562	1890	House with shed roof, wall-planks horizontal, doorway in side wall, front wall lower.	Songish	38
Eells, p. 605	1887	House with shed roof, wall-planks horizontal, doorway in side-wall, move plank for escape of smoke.	Twana Chemakum Clallam	39 40 41
Gibbs (a), p. 402	1855	House 18 by 30 ft., built of heavy planks, which are guttered, slope toward one end, lined with mats.	Clallam	41

Calkins, p. 791	1911	House with shed roof, wall-planks horizontal.	Makah	42
Swan (a), p. 4	1855	House with shed roof, wall-planks horizontal, roof planks overlap.	Makah	42
Wickersham (b), p. 21	1896	Houses built end to end; one side is higher than the other, giving slight inclination to the roof.	Makah	42
Curtis, vol. 9, p. 147	1913	House with shed roof, wall-planks horizontal, pit.	Quilliute	43
Gibbs (b), p. 157	1876	House with shed roof.	Puget Sound	44
Curtis, vol. 9, pp. 45, 147	1913	House with shed roof, wall-planks.	Puget Sound	44
Waterman	1920	House with shed roof, wall-planks horizontal, roof-planks transverse, plank moved for escape of smoke, doorway in side-wall, pit.	Puget Sound	44

AREA 4—*Concluded*

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Vancouver, p. 123	1792	"Houses like those of Nootka Sound."	Puget Sound	44
Wickersham (a), p. 47	1893	House set in the ground 2 ft. or more.	Puget Sound	44
Costello, p. 19	1895	Houses have shed roof.	Puget Sound	44

AREA 5

PACIFIC COAST FROM THE QUINAULT TRIBE IN WESTERN WASHINGTON TO HUMBOLDT BAY IN NORTHERN CALIFORNIA

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Swan, p. 263	1857	Gabled house, "like Chehalis houses."	Quinault	45
Swan, p. 32	1857	Gabled house, wall-planks horizontal, roof-planks transverse to ridge-pole; sketch shows European window.	Chehalis	46
Swan, pp. 331, 339	1857	Gabled house, wall-planks vertical.	Probably Chehalis	
Work, vol. 3, p. 206	1824	Gabled house, wall-planks vertical, space all the way along ridge for the escape of smoke.	Chehalis	46

AREA 5—*Continued*

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Curtis, vol. 9, pp. 45–58, 157	1913	Gabled house, wall-planks vertical, door in side-wall [*sic*], move plank for escape of smoke.	Chehalis	46
Gibbs, p. 215		Gabled house, pit 1 ft. deep two tiers of bunks around walls.	Chinook	47
Swan, p. 110	1857	Gabled house, vertical wall-planks support ridge-pole with help of additional posts, roof-planks horizontal with edges overlapping. doorway is round hole at end of house, move plank for escape of smoke, wooden platform and bunks around walls.	Chinook	47

Lewis and Clark, vol. 3. p. 152	1805	Gabled (?) house, 20 x 20 ft., pit 8 ft. deep, covered with bark, small round door "at top" [*sic*].	Lower Columbia		
Lewis and Clark, vol. 3, p. 356	1805	Gabled house, 20 x 60, wall-planks vertical, pit 4 ft. deep, enter through small door and down a ladder, bunks around walls.	Clatsop	48	
Victor, p. 125	1832	Gabled house, 40 x 100, wall-beams horizontal, one ridge-pole which is supported by center posts, low oval door, pit 3 [ft. deep, flight of steps [*sic*].	Columbia river		
Bancroft, vol. 1, p. 231	1886	Gabled house, 25 x 75, wall-planks sometimes vertical, sometimes horizontal, two central posts, four corner posts, ridge-pole.	Chinook	47	

AREA 5—*Continued*

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Hale, vol. 6, pp. 201, 216, 217	1838–1842	Oblong house, double tiers of bunks.	Chinook	47
Irving, pp. 71, 206	1812	Gabled house, pit 6 feet deep, doorway in gable end, ladder, sleeping-places ranged along walls around part of house, remainder of space for storing food.	Wishram	49
Kelley, p. 71	1830	Gabled house, ridge-pole 2 or 3 ft. in diameter, rests on posts, roof made of bark, doorway cut through a plank, large opening in roof for escape of smoke.	Oregon tribes	

Sapir, vol. 2, p. 674	1910	Quadrangular house, partly underground, smoke-hole, entrance by a ladder.	Takelma	50
Schumacher, p. 356	1877	House-pits mentioned.	Pistol river	51
Mrs. Lucy Thompson, pp. 32–35	1916	Gabled house, pit 5 ft. deep, wall-planks vertical, doorway in end of house, paired ridge-poles, "four posts support roof," notched log for ladder, move plank for escape of smoke.	Yurok	53
Waterman (in press)		Gabled house, 18 x 30, pit 4 or 5 ft. deep, wall-planks vertical supporting pair of ridge-poles, roof-planks transverse to ridge-pole, entrance by hole through plank, notched log for ladder, move plank for escape of smoke.	Yurok	53

AREA 5—*Concluded*

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Powers, p. 45	1877	House with "flattish" roof, wall-planks vertical, pit 4 or 5 ft. deep, round hole in plank for doorway, sleep above edges of pit.	Tolowa Yurok Karok	52 53 54
Bodega, quoted by Loud, p. 243	1775	Square house, pit 2 ft. deep, circular hole for doorway, "roof no higher than surface of the ground."	Yurok	53
Vancouver, p. 244	1793	Gabled house, wall-planks vertical, entrance through round hole, "house on level with the ground."	Yurok	54

Goddard	1903	House nearly square, 20 x 20, pit 5 ft. deep, wall-planks vertical, entrance in end of house through round hole in plank, roof-board pushed aside for escape of smoke.	Hupa	55
Dixon, p. 413	1907	Dance house, entrance through hole, down a notched ladder.	Shasta	56

AREA 6

The Southwest

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Goddard (b), p. 30	1913	Kivas for the greater part circular and underground, entered by hatchways through the roof.	"All large ruins"	
Hodge	1907	Kivas invariably entered by hatchway.	Entire Southwest	
Judd, p. 6	1919	Houses of adobe, with entrance through the roof.	Paragonah, Utah	57
Nordenskiöld	1893	Kivas circular and subterranean.	Mesa Verde	58
Mindeleff, V., p. 111	1886	Ancient kivas round, wholly subterranean, entered from above.	Hopi	59
Hodge	1907	Kivas wholly or partly underground.	Hopi	59

Hodge	1907	Kivas partly subterranean.	Zuñi	60
Hodge	1907	Rectangular kivas.	Zuñi	60
			Hopi	59
Fewkes (a), p. 23	1911	Circular kivas are limited to Mesa Verde, San Juan drainage, Chaco cañon, Navaho Monument, Cañon de Chelly, many of the Rio Grande pueblos, Utah.	North of Marsh pass	
		Rectangular kivas are found in prehistoric Hopi sites, modern Snake kiva in Hopi, and in Zuñi.	South of Marsh pass	
Fewkes (b), p. 26	1911	At "Old Caves" there are rooms entered by hatchways from overhead.	Flagstaff, Ariz.	61
Colton, p. 126	1908	Traces of underground chambers, circular; may be remains of "hogáns."	Flagstaff, Ariz.	61

AREA 6—*Concluded*

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Hough, p. 415	1905	Pit-dwellings, rectangular, entered by smoke-hole.	Luna, N. Mex.	62
Hodge	1907	Kivas are underground, either square or round.	Rio Grande pueblos.	63

NOTE.—Numerous and well-known authorities are available on the subject of kivas, but they add nothing to the facts of *distribution* indicated above.

AREA 7
Southern California

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Cabrillo, p. 311	1542	Fifty souls lived in each house.	Channel islands	64
Schumacher, p. 353	1877	House-pits lined with boards.	Santa Cruz id.	64
Cabrillo, p. 306	1542	"Houses like those of New Spain."	Coast near Santa Barbara	65
Putnam, p. 76	1879	Conical houses, built over a pit, roof of rushes and earth, entrance through smoke-hole, or through doorway on level with the ground.	Southern California	
Kroeber (in press)		Semi-subterranean sweat-house.	Gabrieliño	66

AREA 7—*Concluded*

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Kroeber (in press)		Pit-structure, conical roof, earth-covered, not entered through roof.	Luiseño	67
Kroeber (in press)		Elliptical house, gabled, earth-covered.	Diegueño	68
Kroeber (in press)		Semi-subterranean sweat-house, earth-covered.	Cahuilla	69
Kroeber (in press)		Rectangular house, four posts in center, covered with earth, dome-shaped, doorway in front wall, which is vertical.	Mohave	70

AREA 8

THE PLAINS

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Will, George F.	Letter	Smoke-hole used as entrance only on special and rare occasions.	Hidatsa	71
Henry, vol. 1, pp. 338, 348	1806	Circular house, diameter 90 ft., pit 1½ ft. deep, fireplace 5 ft. square, excavated 2 additional feet, 4 central posts, 15 ft. high, framework of poles, thatched with willows, earth-covering 4 ft. thick in walls, 1 ft. thick on roof, door of rawhide on frame, passage 10 ft. long, smoke-hole 4 ft. square. In Hidatsa lodge pit is 4 ft. deep.	Hidatsa Mandan	71 72

AREA 8—*Continued*

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Lewis and Clark, vol. 1, pp. 208, etc.	1803	Circular house, diameter 30 or 40 ft., framework of posts and poles, covered with willow branches, grass, and mud; passage 10 ft. long.	Hidatsa Mandan Amahami Arikara	71 72 73 74
Dorsey, pp. 269, 271	1891	Earth-lodge 100 ft. in diameter, pit 4 ft. deep, 8 or 10 center posts, notched log for ladder served for climbing to roof outside.	Ponka Omaha	75 76
Bradbury, p. 78	1809	"Lodges constructed like those of the Oto" (see below), except that they have an additional railing at the eaves. Its purpose is to catch the earth which rolls from the roof.	Mandan Arikara	72 74

Doyle, p. 462	1876	Subterranean lodge, 8 ft. in diameter, neatly lined with grass and buffalo-robes, entrance from above, at one side of house; each house inhabited by one family. Quoting information dated 1825.	Pawnee	77	
Clark, p. 115	1885	Circular houses of posts and poles, 25 to 56 ft. in diameter, covered with willow withes, sodded to depth of 9 in. on roof, thicker on other parts, passageway, fire in center, smoke-hole.	Pawnee Arikara	77 74	
Sterns, p. 135	1914	Traces of subterranean houses, rectangular, entered by a ladder.	E. Nebraska	78	

AREA 8—*Concluded*

Authority	*Date*	*Features of the Structure*	*Description applies to:*	*Map*
Bradbury, p. 78	1809	Circular house, earth-covered, 40 ft. in diameter, pit 3 ft. deep; in center of house a circular space is dug, 8 ft. in diameter and 2 ft. deep; people sit here around the fire; small smoke-hole.	Oto	79
James, vol. 1, p. 189	1819	Hemispherical house, pit 1 to 3 ft. deep, framework of poles and logs covered with grass and earth, smoke-hole.	Kansa	79
Fletcher, vol. 1, p. 410	1907	Earth-lodge, pit 2 to 4 ft. deep, very much as described above.	Osage	81
Doyle, p. 463	1876	Habitations in the form of holes in the ground.	Kiowa	82

NOTE.—A number of famous authorities, in addition to the ones here listed, give information on earth-lodges, but they indicate no additional features.[11]

AREA 9

Pit-dwellings East of the Mississippi as Given by Bushnell

Original Authority	*Date*	*See Bushnell*	*Features of the Structure*	*Tribe*
Adair, James	1775	pp. 69, 70	Circular house; central support consists of four posts in quadrangular form; house is built over a pit; entrance from side by a winding passage.	Chickasaw
Le Moyne, Jacobo	1591	p. 90	"The chief's dwelling . . . is partly underground in consequence of the sun's heat."	Timucua
Moore, Clarence B.	1915	p. 98	Mention of house-pits.	Tennessee river
Evans, R. B.	1881	p. 609	Mention of house-pits.	Kentucky
Tonti	1682	p. 99	Houses placed in divers rows, all made of earth.	Louisiana

BIBLIOGRAPHY

ABBOT, HENRY L.
Explorations for a railroad route from the Sacramento valley to the Columbia river (made in 1854–1855). *Reports of explorations and surveys to ascertain the most practicable and economical route for a railroad from the Mississippi river to the Pacific ocean*, vol. 6, part 2, pp. 1–134, Washington, 1857.

BANCROFT, HUBERT HOWE
The native races [of the Pacific States]. Five volumes. [These form volumes 1–5 of a thirty-volume series entitled The Works of Hubert Howe Bancroft.] San Francisco, 1886–1888.

BANDELIER, A. F.
Final report of investigations among the Indians of the southwestern United States, carried on mainly in the years from 1880–1885. *Papers of the Archæological Institute of America, American series*, IV, part 2, Cambridge, Mass., 1892.

BEECHEY, *Captain* F. W.
Narrative of a voyage to the Pacific and Beering's Strait [*sic*] to cooperate with the Polar expeditions, performed in his Majesty's Ship Blossom, in the years 1825–1828. Two volumes, London, 1831.

BILLINGS, JOSEPH
An account of a geographic and astronomical expedition to the northern parts of Russia . . . and the islands in the Eastern Ocean stretching to the American

coast . . . in the years 1785 to 1794 London, 1802.

BOAS, FRANZ

(*a*) The houses of the Kwakiutl Indians. In *Smithsonian Institution, Proceedings of the U. S. National Museum*, vol. 11, 1888, pp. 197–213, Washington, 1889.

(*b*) First general report on the Indians of British Columbia. *In* Report of the committee . . . appointed to investigate the . . . northwestern tribes of the Dominion of Canada. *Report of the fifty-ninth meeting of the British Association for the Advancement of Science held . . . in 1889*, pp. 801–893, London, 1890.

(*c*) Second general report on the Indians of British Columbia. [Same series.] *Report of the sixtieth meeting, held . . . in . . . 1890*, pp. 562–715, London, 1891.

(*d*) Fifth report on the Indians of British Columbia. [Same series.] *Report of the sixty-fifth meeting, held . . . in . . . 1895*, pp. 523–592, London, 1896.

(*e*) The social organization and secret societies of the Kwakiutl Indians of Vancouver island. *Smithsonian Institution, Report of the U. S. National Museum for 1895*, pp. 311–738.

(*f*) Sixth report on the Indians of British Columbia. *In* Report of the Committee . . . appointed to investigate the . . . northwestern tribes of the Dominion of Canada. *Report of the sixty-sixth meeting of the British Association for the Advancement of Science, held . . . in . . . 1896*, pp. 569–591.

(*g*) The Kwakiutl of Vancouver island. *American Museum of Natural History, Memoirs*, vol. 8, part 2 (Reprinted from *Publications of the Jesup North Pacific Expedition*, vol. 5, part 2), New York and Leyden, 1909.

(*h*) Tsimshian mythology. *Smithsonian Institution, 31st annual report of the Bureau of American Ethnology, for 1909–1910*, pp. 29–1037, Washington, 1916.

BOGORAS, W.

The Chukchee: material culture. *Memoirs of the American Museum of Natural History*, vol. 11, part 1 (Reprinted from *Publications of the Jesup North Pacific Expedition*, vol. 7, part 1), New York and Leyden, 1904.

BRACKENRIDGE, H. M.

Journal of a voyage up the River Missouri performed in 1811. In *Early Western Travels, 1748–1846*, Reuben Gold Thwaites, editor, vol. 6, pp. 19–166, Cleveland, 1904.

BRADBURY, JOHN

Travels in the interior of America in the years 1809, 1810 and 1811; including a description of upper Louisiana . . . In *Early Western Travels, 1748–1846*. Reuben Gold Thwaites, editor, vol. 5, pp. 25–320, Cleveland, 1904.

BURNEY, *Captain* JAMES

A chronological history of northeastern voyages of discovery and of the early eastern navigations of the Russians. London, 1819

BUSHNELL, D. I., *Jr.*
Native villages and village sites east of the Mississippi. *Smithsonian Institution, Bureau of American Ethnology, Bulletin 69*, Washington, 1919.

CABRILLO, JUAN DE
[For a journal of his voyage, recorded by Ferrel and translated by H. W. Henshaw, see PUTNAM, 1879.]

CALKINS, C. G.
The Northwest Corner. *The World To-day*, vol. 21, pp. 791–800, July, 1911.

CAMPBELL, ARCHIBALD
A voyage round the world from 1806 to 1812; in which Japan, Kamschatka, the Aleutians, and the Sandwich islands were visited . . . with an account of the present state of the Sandwich islands and a vocabulary of their language. Edinburgh, 1816.

CARLSON, FRANK
Chief Sealth. *The Bulletin of the University of Washington the State University* [sic] *issued quarterly*, series 3, no. 2, pp. 1–35, History Series, Seattle, 1903.

CATLIN, GEORGE
Letters and notes on the manners, customs and condition of the North American Indians. Written during eight years travel amongst the wildest tribes of Indians in North America, in 1832, 1833, 1834, 1835, 1836, 1837, 1838 and 1839. London, 1841.

CHAMBERLAIN, A. F.
Report on the Kootenay Indians of south-eastern British Columbia. In Report of

the committee appointed to investigate . . . the northwestern tribes of the Dominion of Canada. *Report of the sixty-second meeting of the British Association for the Advancement of Science, held . . . in . . . 1892*, pp. 549–615, London, 1893.

CLARK, W. P.
The Indian sign language, with brief explanatory notes of the gestures taught deaf-mutes in our institutions for their instruction, and a description of some of the peculiar laws, customs, myths, superstitions, ways of living, code of peace and war signals of our aborigines. Philadelphia, . . . 1885.

COLLISON, W. H.
In the wake of the War Canoe . . . New York, 1916.

COLVOCORESSES, GEORGE M.
Four years in a government exploring expedition . . . [An account of the Wilkes Expedition.] New York. 1852.

COLTON, M. R. F. *and* H. S.
The little-known small-house ruins in the Coconino forest. *Memoirs of the American Anthropological Association*, vol. 5, number 4, pp. 101–126, 1918.

COOK, *Captain* JAMES
A voyage to the Pacific Ocean . . . to determine the position and extent of the west side of North America . . . in his Majesty's Ships the Resolution and Discovery, in the years 1776, 1777, 1778, 1779. and 1780. Three volumes. [These form volumes 6, 7, and 8 of a nine-volume series entitled "Cook's Voyages."] London, 1784.

COSTELLO, J. A.
The Siwash; their life, legends and tales. Puget sound and Pacific Northwest. [On the cover: "Indian history of the Northwest: Siwash."] Seattle, 1895.

COX, ROSS
The Columbia river; or, scenes and adventures during a residence of six years on the western side of the Rocky mountains. . . . 2 vols. London, 1832.

COXE, WILLIAM
Account of Russian discoveries between Asia and America. To which are added, the conquest of Siberia, and the history of the transactions and commerce between Russia and China. Edition 3. London, 1787.

CULBERTSON, THADDEUS A.
Journal of an expedition to the Mauvaises Terres and the Upper Missouri in 1850. *Fifth Annual Report of the Smithsonian Institution* . . . for 1850, pp. 84–132, Washington, 1850.

CURTIS, EDWARD S.
The North American Indian; being a series of volumes picturing and describing the Indians of the United States and Alaska, written, illustrated and published by Edward S. Curtis, edited by Frederick Webb Hodge, foreword by Theodore Roosevelt, field research conducted under the patronage of J. Pierpont Morgan. Twenty volumes [11 volumes issued to date], published in the years 1907–1916.

CUSHING, FRANK H.
A study of Pueblo pottery as illustrative of Zuñi culture-growth. *Smithsonian Institution, Fourth Annual Report of the Bureau of American Ethnology, for 1882–83*, pp. 473–521, Washington, 1886.

DALL, W. H.
On succession in shellheaps of the Aleutian islands. U. S. Interior Department, Geographical and Geological Survey of the Rocky Mountain Region, J. W. Powell, Geologist in charge. *Contributions to North American Ethnology*, vol. 1, pp. 41–91, Washington, 1877.

DENNY, EMILY INEZ
Blazing the way, or, true stories, songs and sketches of Puget sound and other pioneers [*sic*]. With illustrations by the author and from authentic photographs. Seattle, 1909.

DIXON, ROLAND B.
(*a*) The northern Maidu. *American Museum of Natural History, Bulletins*, vol. 17, pp. 168–174, New York, 1902–1907.
(*b*) The Shasta. Ibid., pp. 413–419.

DORSEY, JAMES OWEN
Omaha dwellings, furniture, and implements. *Smithsonian Institution, Thirteenth Annual Report of the Bureau of Ethnology, for 1891–1892*, pp. 269–288, Washington, 1896.

DOYLE, W. E.
Indian forts and dwellings. *Annual Report of the Smithsonian Institution . . . for the year 1876*, pp. 460–465, Washington, 1877.

DRAKE, *Sir* FRANCIS
The course which Sir Francis Drake held from the haven of Guatulco in the South sea on the backe side of Nueva Espanna to the northwest of California . . . *In* Hakluyt, Richard, The principal navigations, voyages, traffiques, and discoveries of the English nation . . In 12 volumes. Glasgow and New York, 1903–1905.

EELLS, MYRON
The Twana, Chemakum and Clallam Indians of Washington Territory. *Annual Report of the Smithsonian Institution for 1887*, pp. 605–681, Washington, 1889.

ELLIOTT, HENRY
Ten years acquaintance with Alaska, 1867–1877. Harper's Monthly Magazine, vol. 55, no. 330, New York, 1877.

ELLIOTT, T. C.
See WORK, JOHN.

FARRAND, LIVINGSTON
Article "Nez Percés," *In* Handbook of American Indians, *Smithsonian Institution, Bureau of American Ethnology, Bulletin 30*, part 2, Washington, 1910.

FEWKES, JESSE WALTER
(*a*) Antiquities of the Mesa Verde National Park. Spruce-tree house. *Smithsonian Institution, Bureau of American Ethnology, Bulletin 41*, Washington, 1909.
(*b*) Preliminary report of a visit to the Navaho National Monument, Arizona. *Smithsonian Institution, Bureau of American Ethnology, Bulletin 50*, Washington, 1911.

(*c*) Prehistoric villages, castles and towers of southwestern Colorado. *Smithsonian Institution, Bureau of American Ethnology, Bulletin 70*, Washington, 1919.

FLETCHER, ALICE C.

Article "Earth-lodge," *in* Handbook of American Indians, *Smithsonian Institution, Bureau of American Ethnology, Bulletin 30*, part 1, pp. 410–411, Washington, 1907.

FLETCHER, ALICE C., *and* LAFLESCHE, FRANCIS.

The Omaha tribe. *Smithsonian Institution, Twenty-seventh Annual Report of the Bureau of American Ethnology, for 1905–1906*, pp. 15–654, Washington, 1911.

FRASER, SIMON

Journal of a voyage from the Rocky mountains to the Pacific coast, 1808. *In* Les Bourgeois de la Compagnie du Nord-ouest. Recits de voyages, lettres et rapports inédits relatifs au nord-ouest Canadien. Première série, pp. 156–221, Quebec, 1889.

GIBBS, GEORGE

(*a*) . . . on the Indian tribes of the Territory of Washington. *Reports of explorations and surveys to ascertain the most practical and economic route for a railroad from the Mississippi river to the Pacific ocean made . . . in 1853–54*, vol. 1, pp. 402–434, Washington, 1855.

(*b*) Tribes of western Washington and northwestern Oregon. *In* Department of the Interior, U. S. Geographical and Geological Survey of the Rocky Mountain region, J. W. Powell, Geologist in charge, *Contributions to North American Ethnology*,

vol. 1, part 2, pp. 157–309, Washington, 1877.

GODDARD, PLINY EARLE

(*a*) Life and culture of the Hupa. *University of California, Publications in American Archæology and Ethnology*, vol. 1, pp. 3–88, Berkeley, 1903.

(*b*) The Indians of the Southwest. *American Museum of Natural History, Handbook Series*, no. 2, New York, 1913.

GREINER, RUTH.

See WATERMAN, T. T., *and* GREINER.

HALE, HORATIO

Ethnography and Philology . . . *In* United States Exploring Expedition during the years 1838, 1839, 1840, 1841, 1842, under the command of Charles Wilkes, U. S. N., vol. 6, pp. 197–225, Philadelphia, 1846.

HANDBOOK of American Indians north of Mexico. *Smithsonian Institution, Bureau of American Ethnology, Bulletin 30*, edited by Frederick Webb Hodge. 2 volumes, Washington, 1907, 1910.

HENRY, ALEXANDER

The manuscript journal of Alexander Henry, fur trader of the Northwest Company, 1799–1814. *In* New Light on the Early History of the Greater Northwest, edited . . . by Elliott Coues, 3 volumes, New York, 1897.

HILL-TOUT, C.

British North America. I, The Far West, the home of the Salish and Déné. "Native Races of the British Empire" Series. London, 1907.

HODGE, F. W.
Article "Kiva," in Handbook of American Indians *Smithsonian Institution, Bureau of American Ethnology, Bulletin 30*, part 1, 1907.

HOLMES, WILLIAM HENRY
Anthropological studies in California. *Smithsonian Institution, Report of the U. S. National Museum. . . . for . . . the year ending June 30, 1900*, pp.155–187, Washington, 1902.

HOUGH, WALTER
Exploration of a pit house village at Luna, New Mexico. *Smithsonian Institution, Proceedings of the National Museum*, vol 55, pp. 409–431, Washington, 1919.

IRVING, WASHINGTON
Astoria, or, anecdotes of an enterprise beyond the Rocky mountains. Two volumes. Philadelphia, 1836.

JAMES, EDWIN
Account of an expedition from Pittsburg to the Rocky mountains performed in the years 1819, 1820 . . . Compiled from the notes of Major Long, Mr. T. Say, and other gentlemen of the party. London, 1823. In *Early Western Travels*, Reuben Gold Thwaites, editor, vols. 14–17, Cleveland, 1905.

JEWITT, JOHN
The adventures of John Jewitt, only survivor of the crew of the ship Boston, during a captivity of nearly three years among the Indians of Nootka sound in Vancouver island. Edited by Robert Brown. London, 1896.

JOCHELSON, WALDEMAR
The material culture and social organization of the Koryak. *American Museum of Natural History, Memoirs*, vol. 10, part 2, pp. 452–66 (Reprinted from *Publications of the Jesup North Pacific Expedition*, vol. 6, part 2), New York and Leyden, 1908.

JUDD, NEIL M. Archæological investigations at Paragonah, Utah. *Smithsonian Miscellaneous Collections*, vol. 70, no. 3, Publication 2536, pp. 1–22, Washington, 1919.

KANE, PAUL
Wanderings of an artist among the Indians of North America. London, 1859.

KELLEY, HALL J.
A general circular to all persons of good character who wish to emigrate to the Oregon Territory. . . . By order of the American Society for encouraging the settlement of the Oregon Territory . . . instituted in Boston, A. D. 1829. Charleston, 1831.

KROEBER, A. L.
Handbook of the California Indians. (*In press.*)

LA PEROUSE, J. F. G. DE
A voyage round the world in the years 1785, 1786, and 1788. . . . Three volumes, translated from the French. London, 1798.

LEWIS AND CLARK
Original journals of the Lewis and Clark expedition, 1804–1806. Printed from the original manuscripts in the Library of the American Philosophical Society and by

direction of its committee on historical documents, together with manuscript material of Lewis and Clark from other sources, including notebooks, letters, maps, etc., and the Journals of Charles Floyd and Joseph Whitehouse. Now for the first time published in full and exactly as written. Edited, with introduction, notes, and index, by Reuben Gold Thwaites, LL.D. Eight volumes, New York, 1904.

LOUD, LLEWELLYN L.

Ethnogeography and archæology of the Wiyot territory. *University of California, Publications in American Archæology and Ethnology*, vol. 14, pp. 221–436, Berkeley, 1918.

MATTHEWS, WASHINGTON

The earth-lodge in art. American Anthropologist, n.s., vol. 4, no. 1, pp. 1–12, 1902.

MAXIMILIAN (*Fürst von Wied*)

Travels in the interior of North America, 1832–1834, part 2. In *Early Western Travels, 1748–1846*, Reuben Gold Thwaites, editor, vol. 23, pp. 269–272, Cleveland, 1906.

MEARES, JOHN

Voyages made in the years 1788 and 1789, from China to the northwest coast of America. . . . Two volumes. London, 1791.

MINDELEFF, COSMOS

(*a*) Aboriginal remains in Verde valley, Arizona. *Smithsonian Institution, Thirteenth Annual Report of the Bureau of Eth-*

nology, 1891–92, pp. 179–261, Washington, 1896.

(*b*) The cliff ruins of Canyon de Chelly, Arizona. *Smithsonian Institution, Sixteenth Annual Report of the Bureau of American Ethnology, 1894–95*, pp. 79–198, Washington, 1897.

MINDELEFF, VICTOR

A study of pueblo architecture: Tusayan and Cibola. *Smithsonian Institution, Eighth Annual Report of the Bureau of Ethnology, 1886–87*, pp. 13–228, Washington, 1891.

MORGAN, LEWIS H.

Houses and house-life of the American aborigines. U. S. Department of the Interior, Geographical and Geological Survey of the Rocky Mountain region, J. W. Powell, Geologist in charge, *Contributions to North American Ethnology*, vol. 4, Washington, 1881.

MÜLLER, G. F.

Voyages from Asia to America for completing the discoveries of the northwest coast of America, 1705–1783. First edition. London, 1761.

MURDOCH, JOHN

Ethnological results of the Point Barrow expedition. (International Polar Expedition to Point Barrow, Alaska, 1881–1883.) *Smithsonian Institution, Ninth Annual Report of the Bureau of Ethnology, 1887–88*, pp. 3–441, Washington, 1892.

NELSON, N. C.

Human culture. *Natural History*, vol. 19, no. 2, pp. 131–140, New York, 1919.

NIBLACK, ALBERT P.
The coast Indians of southern Alaska and northern British Columbia . . . *Smithsonian Institution, Report of the U. S. National Museum . . . for . . . 1888*, pp. 225–386, Washington, 1890.

NORDENSKIÖLD, G.
Cliff-dwellers of the Mesa Verde. Stockholm and Chicago, 1893.

PARKMAN, FRANCIS
The Oregon trail. Sketches of prairie and Rocky Mountain life. Boston, 1910.

PORTLOCK, NATHANIEL
A voyage round the world, but more particularly to the northwest coast of America, performed in 1785, 1786, 1787 and 1788 in The King George and Queen Charlotte, Captains Portlock and Dixon. London, 1789.

POWERS, STEPHEN
Tribes of California. U. S. Interior Department, Geographical and Geological Survey of the Rocky Mountain Region, J. W. Powell, Geologist in charge, *Contributions to North American Ethnology*, vol. 3, Washington, 1877.

PUTNAM, F. W.
Reports upon archæological and ethnological collections from the vicinity of Santa Barbara, California. . . . *Engineer Department, U. S. Army, Report upon U. S. Geographical Surveys west of the One Hundredth Meridian, in charge of First Lieut. Geo. M. Wheeler*, vol. 7, Washington, 1879.

SAPIR, EDWARD
Article "Takelma," in Handbook of American Indians, *Smithsonian Institution, Bureau of American Ethnology, Bulletin 30*, part 2, Washington, 1910.

SHOTRIDGE, LOUIS *and* FLORENCE
Indians of the Northwest. *University of Pennsylvania, The Museum Journal*, vol. 4, no. 3, pp. 71–99, Philadelphia, 1913.

SCHUMACHER, PAUL
Aboriginal settlements of the Pacific coast. *Popular Science Monthly*, vol. 10, pp. 353–356, New York, 1877.

SMITH, HARLAN I.
(*a*) Archæology of the Gulf of Georgia and Puget sound. *American Museum of Natural History, Memoirs*, vol. 4, part 6 (Reprinted from *Publications of the Jesup North Pacific Expedition*, vol. 2, part 6), New York and Leyden, 1907.
(*b*) The archæology of the Yakima valley. *American Museum of Natural History, Anthropological Papers*, vol. 6, part 1, pp. 1–171, New York, 1910.

SPINDEN, HERBERT J.
The Nez Percé Indians. *American Anthropological Association, Memoirs*, vol. 2, part 3, Lancaster, Penn., 1908.

STERNS, FRED H.
Ancient lodge-sites on the Missouri in Nebraska. *American Anthropologist*, n. s., vol. 16, pp. 135–137, 1914.

SWAN, JAMES G.
(*a*) The Northwest coast or, three years residence in Washington Territory. New York, 1857.

(*b*) The Indians of Cape Flattery at the entrance to the Strait of Fuca, Washington Territory. *Smithsonian Contributions to Knowledge* [number] 220 . . . vol. 16 art. 8, pp. 1–108. Accepted for publication, June, 1868. Washington, 1870.

SWANTON, JOHN R.

Contributions to the ethnology of the Haida. *American Museum of Natural History, Memoirs*, vol. 8, part 1 (Reprint from *Publications of the Jesup North Pacific Expedition*, vol. 5, part 1), New York and Leyden, 1909.

TEIT, JAMES

The Thompson Indians of British Columbia. *American Museum of Natural History, Memoirs*, vol. 2, part 4, pp. 167–390. (*Publications of the Jesup North Pacific Expedition*, vol. 1), New York and Leyden, 1900.

THOMPSON, DAVID

David Thompson's narrative of his explorations in western America, 1784–1812. Edited by J. B. Tyrrell. *Publications of the Champlain Society*, vol. 12, Toronto, 1916.

THOMPSON, *Mrs* LUCY

To the American Indian [*sic*]. Eureka, California, 1916.

TYTLER, PATRICK FRASER

Historical view of the progress of discovery on the more northern coasts of America from the earliest period to the present time, with descriptive sketches of the natural history of the North American regions, by James Wilson; to which is added an appendix, containing remarks of a late

memoir of Sebastian Cabot, with a vindication of Richard Hakluyt. Second edition. Edinburgh and London, 1733.

VANCOUVER, *Captain* GEORGE
A voyage of discovery to the North Pacific ocean . . . performed in the years 1790, 1791, 1792, 1793, 1794, and 1795, in the Discovery Sloop-of-War and the Armed Tender Chatham. Three volumes. London, 1798.

VICTOR, *Mrs* FRANCES FULLER
"The River of the West." Life and Adventure in the Rocky Mountains and Oregon, embracing events in the life-time of a mountain-man and pioneer, with the early history of the northwestern slope, including an account of the fur traders, the Indian tribes, the overland immigration, the Oregon missions and the tragic fate of Rev. Dr. Whitman and family. Also, a description of the country, its conditions, prospects and resources; its soil, climate and scenery, its mountains, rivers, valleys, deserts, and plains, its inland waters and natural wonders, with numerous engravings. Published by subscription only. Hartford, Conn., Newark, N. J., Toledo, O., and San Francisco, 1870.

VON LANGSDORFF, G. H.
Voyages and travels in various parts of the world during the years 1803, 1804, 1805, 1806 and 1807. 2 volumes. London, 1814.

VOTH, H. R.
The Oraibi Oáqöl ceremony. *Field Columbian Museum, Anthropological Series,*

Publication 84, vol. 6, no. 1, The Stanley McCormick Hopi Expedition, Chicago, 1903.

WATERMAN, T. T.

Notes on Yurok culture. *Museum of the American Indian, Heye Foundation, Indian Notes and Monographs*, vol. VII, no. 4. (In press.)

WATERMAN, T. T., *and* GREINER, RUTH

Indian houses of Puget sound. *Museum of the American Indian, Heye Foundation, Indian Notes and Monographs* (9), New York, 1920.

WICKERSHAM, JAMES

(*a*) Japanese Art on Puget sound. *American Antiquarian*, vol 15, pp. 47–49, 1893.

(*b*) Pueblos on the Northwest coast. *American Antiquarian*, vol. 18, pp. 21–24, 1896.

WILKES, CHARLES

Narrative of the United States Exploring Expedition during the years 1838, 1839, 1840, 1841, 1842, by Charles Wilkes, U. S. N., Commander of the expedition. Five volumes and an atlas. Philadelphia, 1845.

WISSLER, CLARK

The material culture of the North American Indians. *In* Anthropology in North America, edited by Franz Boas, pp. 76–134, New York, 1915.

WORK, JOHN

"Journal of John Work, 1824–1826," edited by T. C. Elliott. *Washington His-*

torical Quarterly. The Washington University [*sic*] State Historical Society, vol. 3, pp. 198–228; vol. 5, pp. 83–115, 163–191, 258–287; vol. 6, pp. 26–49. Seattle, 1908–1915.

NOTES

1. Smithsonian Institution, Bureau of American Ethnology, Bulletin 30.
2. The Koryak, pp. 462–466.
3. Boas, 1890.
4. Indian Houses of Puget Sound, *Indian Notes and Monographs* (9), New York, 1920.
5. Smith, 1906, p. 433.
6. Smith, pp. 439, 441.
7. Boas, Tsimshian Mythology, in *Smithsonian Institution, Bureau of American Ethnology, 31st Annual Report*, p. 840.
8. Hodge; Fewkes (*b*), p. 23.
9. Cushing, 1882, p. 476; Fewkes (*b*), p. 25.
10. 1876 p. 461.
11. Thompson, 1798, pp. 227, 229 (Mandan); Brackenridge, 1911, p. 115 (Arikara); Catlin, 1832, v. 1, p. 92 (Mandan); Maximilian, 1833, v. 2, p. 270 (Mandan, Hidatsa, Arikara); Culbertson, 1850, p. 116 (Arikara); Morgan, 1881, p. 126 (Mandan, Hidatsa); Fletcher and LaFlesche, 1911 (Omaha).

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